

Express Mail No. ET169352968US

FORM PTO-1590 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER CIRTES2	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
				09/856311	
INTERNATIONAL APPLICATION NO. PCT/FR99/02790		INTERNATIONAL FILING DATE 15 November 1999		PRIORITY DATE CLAIMED 19 November 1998	
TITLE OF INVENTION METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS					
APPLICANT(S) FOR DO/EO/US BARLIER, Claude					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<p>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <p>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</p> <p>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</p> <p>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</p> <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).</p> <p>a. <input checked="" type="checkbox"/> is attached hereto.</p> <p>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</p> <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <p>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</p> <p>b. <input type="checkbox"/> have been communicated by the International Bureau.</p> <p>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</p> <p>d. <input checked="" type="checkbox"/> have not been made and will not be made.</p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unsigned)</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p> <p><b>Items 11 to 20 below concern document(s) or information included:</b></p> <p>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.</p> <p>14. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: Drawings (2 sheets) Abstract Express Mail Transmittal Postcard Receipt</p>					

U.S. <b>09/856311</b>	INTERNATIONAL APPLICATION NO <b>PCT/FR99/02790</b>	ATTORNEY'S DOCKET NUMBER <b>CIRTES2</b>
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<p>21. <input checked="" type="checkbox"/> The following fees are submitted:</p> <p><b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b></p> <p>Neither international preliminary examination fee (37 CFR 1.482)          nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO          and International Search Report not prepared by the EPO or JPO. .... <b>\$1000.00</b></p> <p>International preliminary examination fee (37 CFR 1.482) not paid to          USPTO but International Search Report prepared by the EPO or JPO ..... <b>\$860.00</b></p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO          but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... <b>\$710.00</b></p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO          but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... <b>\$690.00</b></p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO          and all claims satisfied provisions of PCT Article 33(1)-(4) ..... <b>\$100.00</b></p> <p style="text-align: center;"><b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b></p> <p>Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30          months from the earliest claimed priority date (37 CFR 1.492(e)).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">CLAIMS</th> <th style="width: 20%;">NUMBER FILED</th> <th style="width: 20%;">NUMBER EXTRA</th> <th style="width: 20%;">RATE</th> <th style="width: 20%;">\$</th> </tr> <tr> <td>Total claims</td> <td>8 - 20 =</td> <td>0</td> <td>x \$18.00</td> <td>\$</td> </tr> <tr> <td>Independent claims</td> <td>1 - 3 =</td> <td>0</td> <td>x \$80.00</td> <td>\$</td> </tr> <tr> <td colspan="4">MULTIPLE DEPENDENT CLAIM(S) (if applicable)</td> <td>+ \$270.00</td> </tr> <tr> <td colspan="4"><b>TOTAL OF ABOVE CALCULATIONS =</b></td> <td><b>\$ 990.00</b></td> </tr> </table> <p><input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above          are reduced by 1/2.</p> <p style="text-align: center;"><b>SUBTOTAL =</b></p> <p>Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30          months from the earliest claimed priority date (37 CFR 1.492(f)).</p> <p style="text-align: center;"><b>TOTAL NATIONAL FEE =</b></p> <p>Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be          accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). <b>\$40.00</b> per property +</p> <p style="text-align: center;"><b>TOTAL FEES ENCLOSED =</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;"></td> <td style="width: 30%;">Amount to be refunded:</td> <td style="width: 10%;">\$</td> </tr> <tr> <td></td> <td>charged:</td> <td>\$</td> </tr> </table>	CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	Total claims	8 - 20 =	0	x \$18.00	\$	Independent claims	1 - 3 =	0	x \$80.00	\$	MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$270.00	<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$ 990.00</b>		Amount to be refunded:	\$		charged:	\$	<p style="text-align: center;"><b>CALCULATIONS PTO USE ONLY</b></p>
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	Amount to be refunded:	\$																														
	charged:	\$																														

a. ☒ A check in the amount of \$ 495.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
 overpayment to Deposit Account No. 03-2405. A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card  
 information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE  
 COHEN, Gary M., Esq.  
 NAME  
 Reg. No. 28,834  
 REGISTRATION NUMBER

09856311-082101

Applicant: C.I.R.T.E.S.  
 Application No.: (not yet assigned)  
 Filed:  
 For: METHOD FOR MAKING MECHANICAL PARTS  
BY DECOMPOSITION INTO LAYERS

Attorney's Ref.: CIRTES2

**STATEMENT CLAIMING SMALL ENTITY STATUS**  
**(37 C.F.R. §1.9(f) and §1.27(c)) - SMALL BUSINESS CONCERN**

I hereby state that I am

- ☐ the owner of the small business concern identified below;  
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: C.I.R.T.E.S.  
 ADDRESS OF SMALL BUSINESS CONCERN: 29bis, rue d'Hellieule  
F-88100 Saint Die, France

I hereby state that the above-identified small business concern qualifies as a small business concern as defined in 13 C.F.R. Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, S.W., Washington, D.C. 20416.

I hereby state that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☐ the specification filed herewith, with title as listed above.  
☒ the application identified above.  
☐ the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 C.F.R. §1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d), or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

- ☒ no such person, concern or organization exists.  
☐ each such person, concern or organization is listed below.

NAME \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

NAME \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 C.F.R. §1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. §1.28(b))

NAME OF PERSON SIGNING: BARLIER  
 TITLE OF PERSON IF OTHER THAN OWNER: Director  
 ADDRESS OF PERSON SIGNING: 29bis, rue d'Hellieule  
F-88100 Saint Die, France

SIGNATURE BARLIER

DATE 25/6/01

**CIRTES**  
 29bis, rue d'Hellieule  
 F - 88100 SAINT-DIE-des-VOSGES  
 Tél 33 (0)3 29 55 11 71 - Fax 33 (0) 3 29 55 10 45

Express Mail No. ET169352968US

PATENT  
cirtes2.d01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of :  
BARLIER, Claude :  
International Application :  
No. PCT/FR99/02790 :  
International Filing :  
Date: 15 November 1999 :  
For a Patent for a :  
METHOD FOR MAKING MECHANICAL PARTS  
BY DECOMPOSITION INTO LAYERS : 18 May 2001

PRELIMINARY AMENDMENT

Box PCT  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

This Preliminary Amendment accompanies a Transmittal Letter entering the above-identified PCT application into its national phase for the United States. Prior to examination, please amend the claims as follows.

IN THE CLAIMS

Please amend the following claims:

4. (Amended) The method as claimed in claim 1, characterized in that the laminations are assembled to form a self-supporting structure.

5. (Amended) The method as claimed in claim 1,

characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).

6. (Amended) The method as claimed in claim 1, characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).

7. (Amended) An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in claim 1.

REMARKS

Prior to examination, entry of the foregoing rewritten claims to delete multiple dependencies and bring the claims into closer compliance with 37 C.F.R. §1.75(c), is respectfully requested in accordance with the provisions of 37 C.F.R. §1.115. Marked up versions of the rewritten claims are enclosed with this Preliminary Amendment, on a separate page, in accordance with the requirements of 37 C.F.R. §1.121(c). An early and favorable consideration of the present application, as amended, is respectfully requested.

Respectfully submitted,



COHEN, GARY M., ESQ.  
Reg. No. 28,834  
Attorney for Applicant

MARKED UP VERSIONS OF REWRITTEN CLAIMS

4. (Amended) The method as claimed in claim 1 [any one of claims 1 to 3], characterized in that the laminations are assembled to form a self-supporting structure.

5. (Amended) The method as claimed in claim 1 [any one of claims 1 to 3], characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).

6. (Amended) The method as claimed in claim 1 [any of claims 1 to 5], characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).

7. (Amended) An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in claim 1 [any one of claims 1 to 6].

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PCT/FR99/02790

METHOD FOR MAKING MECHANICAL PARTS  
BY DECOMPOSITION INTO LAYERS

- The subject of the present invention is an improvement to methods for producing mechanical parts and objects,
- 5 particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:
- manufacturing parts in elemental layers or laminations;
  - building up the collection of layers;
- 10 - assembling the layers;
- said laminations resulting from a prior breakdown of the part along planes and one or more defined steps.

- The invention is also aimed at the elemental laminations thus produced, and at the prototypes obtained by
- 15 assembling said elemental laminations.

- A rapid prototyping method of this type was the subject of European Patent EP-0 585 502-B1, the content of which is incorporated herein entirely by way of reference and is known by the name STRATOCONCEPTION (registered trade
- 20 mark).

- This method is entirely satisfactory within the limits of the applications specified in that patent, the various laminations essentially being positioned and assembled using inserts, the shape and position of which are
- 25 determined also by specific software.

- The fact of providing inserts on the inside, in the case of parts of a certain thickness, nonetheless makes the implementation process, which in other respects is very flexible and effective, somewhat cumbersome.
- 30 Furthermore, it is not possible easily to provide inserts on the inside in the case of laminations whose working

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cross section (thickness of the final part) is small, which laminations are needed for obtaining very fine, and therefore more precise, modeling, or for producing parts whose complex structure entails a breakdown passing  
5 through laminations of very small lateral thickness.

The object of the invention is to propose a method according to the general concept of patent 0 585 502 that also makes it possible if required not to use inserts for the internal assembly of the laminations to each other  
10 and their positioning with respect to each other.

According to the invention, this result is obtained with a method for producing mechanical parts and objects, particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:  
15 - manufacturing parts in elemental layers or laminations;  
- building up the collection of layers;  
- assembling the layers;  
said laminations resulting from a prior breakdown of the  
20 part along planes and one or more defined steps, characterized in that the unitary laminations determined by the breakdown of the part employing software and machined accordingly, essentially comprise:  
- a central portion effectively corresponding to the  
25 lamination with the desired shape and desired thickness for obtaining the finished part,  
- an outer portion of roughly the same thickness, at least partially surrounding said central portion,  
- frangible bridges connecting said central and outer  
30 portions together.

The laminations are then put together either by superposition or by shoring up the various laminations, the outer portions of each lamination finally forming a kind of supporting surround enclosing the reconstructed  
35 part to which it is connected by the frangible bridges.

It will be understood that the part is broken down and



Thus, positioning and holding inserts are added to the  
5 outer surround. These inserts allow the laminations to be  
positioned indirectly by mounting and assembly (for  
example, but without implying any limitation, by  
bonding).

The surround will enclose the final part from the smallest distance, for reasons of precision of assembly and economy of material, which in all instances will necessitate pressing by clamping.

The invention will be better understood with the aid of  
20 the description given hereinafter with reference to the  
appended drawings, in which:

- figure 1 illustrates schematically in the form of a diagram the principle of implementation of the method known as stratoconception;  
 25 - figure 2 illustrates schematically a part reconstructed from elemental laminations with an outer surround, according to the invention;  
 - figures 3A to 3F depict alternative forms of the frangible bridges and of the outer surrounds;  
 30 - figure 4 depicts the part of figure 2 with a self-supporting holding and assembly structure;  
 - figure 5 depicts an alternative form of the part of figure 2 with a holding and assembly structure that involves a mount plate;  
 35 - figures 6 and 7 depict an alternative form of the

- part of figure 2, with an alternative form of assembly of the same type as that of figures 2 and 5;
- 5 - figure 8 illustrates, in part section, one possibly assembly with external inserts for complex shapes and thin laminations.

Reference is made first of all to figure 1.

- The general principle consists, by using specific software (1), in cutting a part that is to be prototyped
- 10 into laminations, the laminations being machined by rapid micromachining (2), the machine being controlled by the software (1), from a material (3) in sheet form.

- The various laminations are assembled into a collection (4) comprising inserts (5) to finally obtain a prototype
- 15 (6) after finishing.

The software governs the choice of slicing/stratification plane, of lamination profile step, of scale ratio, of precision and of the position of the inserts.

- Once the various sheet parameters (dimensions, material,
- 20 choice of direction of clearance) and the machining parameters (cutting rate, cutter diameter, etc) have been input, the entire machining program is transmitted by the software which controls the cutting robot.

Reference will now be made to figure 2.

- 25 According to the invention, the method implemented makes it possible to obtain a multitude of elemental laminations (7) which, once assembled, reproduce the part to be reproduced (8) connected to an outer surround (9) by bridges (10).
- 30 It will be understood that, following appropriate assembly, the elimination of the surround and of the bridges results in the obtaining of the final part (8),

particularly the prototype.

The laminations (7) may have different and highly varied geometric shapes at the bridges (10) and elements (11) that finally form the outer surround (9).

- 5 Various alternative forms are depicted non-limitingly in figures 3A to 3F.

Figure 3A depicts three alternative forms of bridges at the zone of weakness (12) where cutting will occur.

- 10 In figure 3B, it will be noted that the distribution of the bridges, for example three of these, may be uniform around the periphery of the central portion (in this particular instance at 120').

In figure 3C, the alternative form consists in the elements (11) being rounded and enveloping sectors (13).

- 15 In figure 3D, three sectors such as (13) are joined together to form a single collar (14) which fully surrounds the part in a ring (15) in the depiction of figure 3E.

- 20 Finally, in figure 3F, the orifices (16') present in each structure and used to position and to assemble the bridges together, will no longer be circular (16) as they were in the previous figures, but will have a polygonal geometric cross section, which will allow their number in one and the same lamination to be limited, for the same  
25 precise positioning.

The laminations are assembled on shafts (17) of which, in figure 4, there are three, these for example, but non-limitingly, having wing nuts (18) for clamping. In this instance, the structure is self-supporting.

- 30 In figure 5, there are two shafts (21) fixed on a mount plate (19) equipped with bores (20).

This type of assembly may also be used when the method is implemented systematically and, for example, for teaching or even recreational purposes.

In figures 6 and 7, the structures are identical to those of figures 4 and 5, with just one shaft such as (17, 21) and one rod (22) of the insert type to provide positioning.

Finally, figure 8 depicts a complex alternative form with inserts (23) for extremely thin laminations, each insert involving just a few contiguous laminations.

Of course, each elemental lamination will be machined by micromachining in accordance with the general method known as "Stratoconception", possibly with turning over, if necessary, in the course of machining, according to the method described in a patent application filed simultaneously by the applicant and to which express reference is made.

This method allows the manufacture of prototypes of parts of very complex shapes, very rapidly and at low cost. It also opens interesting opportunities for teaching and recreational applications.

CLAIMS

1. A method for producing mechanical parts and objects, particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:
- manufacturing parts in elemental layers or laminations;
  - building up the collection of layers;
  - assembling the layers;
- said laminations resulting from a prior breakdown of the part along planes and one or more defined steps, characterized in that the unitary laminations determined by the breakdown of the part employing specific software and machined accordingly, essentially comprise:
- a central portion (8) effectively corresponding to the lamination with the desired shape and desired thickness for obtaining the finished part,
  - an outer portion (11) of roughly the same thickness, at least partially surrounding said central portion,
  - frangible bridges (10) connecting said central and outer portions together.
2. The method as claimed in claim 1, characterized in that each lamination comprises circular orifices (16) for positioning the bridges and assembling them together.
3. The method as claimed in claim 1, characterized in that each lamination comprises orifices (16') with polygonal geometric cross section, for positioning the bridges and assembling them together.
4. The method as claimed in any one of claims 1 to 3, characterized in that the laminations are assembled to form a self-supporting structure.

5. The method as claimed in any one of claims 1 to 3, characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).
6. The method as claimed in any of claims 1 to 5, characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).
7. An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in any one of claims 1 to 6.
8. A mechanical part, particularly a prototype, characterized in that it is obtained by assembling laminations as claimed in claim 7.

6. The method as claimed in any of claims 1 to 5,  
5 characterized in that assembly is achieved using a  
single shaft (17, 21) and an insert rod (22).

7. An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing  
10 a method as claimed in any one of claims 1 to 6.

8. A mechanical part, particularly a prototype, characterized in that it is obtained by assembling laminations as claimed in claim 7.

ABSTRACT

The invention concerns a method for making mechanical parts and objects, in particular prototypes, from a specific computer-assisted design comprising the following successive steps: making the parts in elementary layers or strata; reconstructing the assembly of layers; assembling the layers, said layers being derived from previous decomposition according to specific planes and one or several step(s). The invention is characterised in that the unit layers determined by the decomposition of the part using a software and machined accordingly comprise essentially: a central portion (8) effectively corresponding to the layer having the shape and thickness desired for the finished part; an outer portion (11) substantially of same thickness, enclosing at least partly said central portion; cleavable hasps (10) linking said central and outer portions together.

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FIG. 1

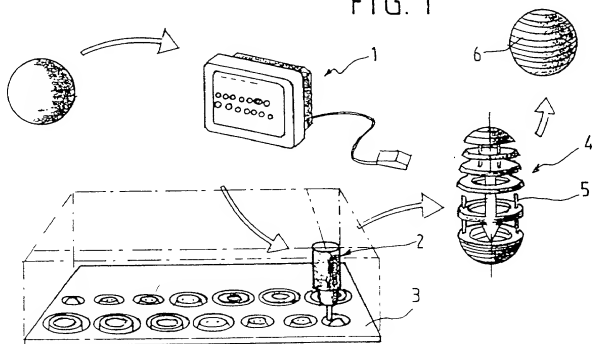


FIG. 2

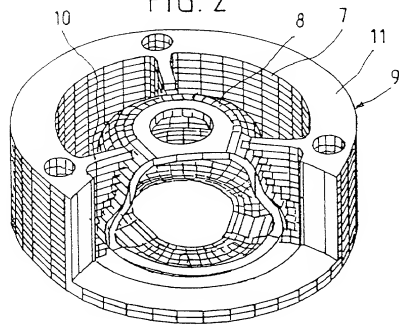


FIG. 3A

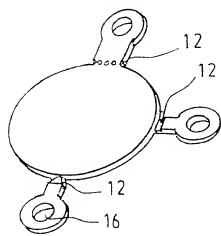


FIG. 3B

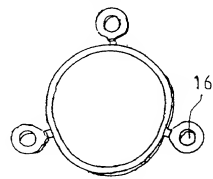
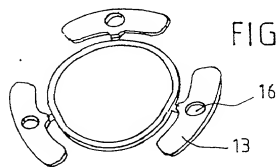


FIG. 3C



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FIG. 4

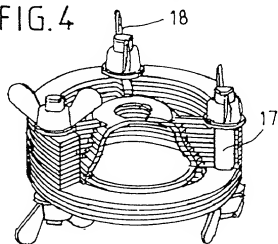


FIG. 6

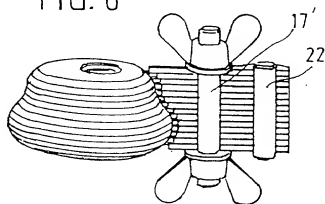


FIG. 5

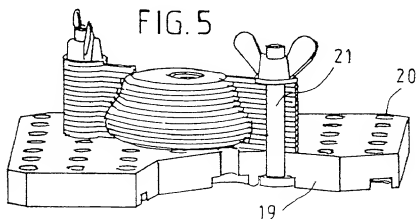


FIG. 3D

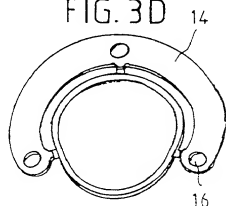


FIG. 7

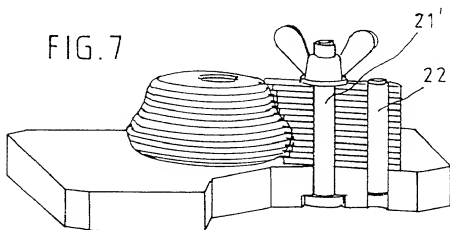


FIG. 3E

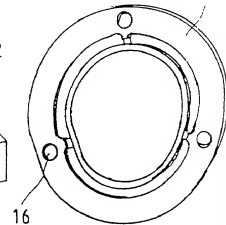


FIG. 8

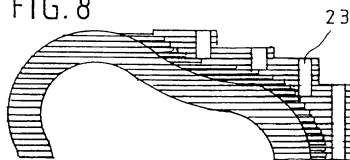
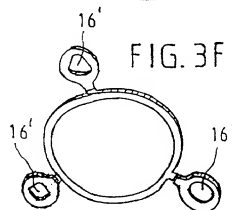


FIG. 3F



COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY  
(Includes Reference to PCT International Applications)

Attorney's Reference:  
CIRTES2

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS, the specification of which (check only one item below):

- ☐ is attached hereto.
- ☐ was filed as United States Patent Application No. \_\_\_\_\_ on \_\_\_\_\_ and was amended \_\_\_\_\_ on \_\_\_\_\_ (if applicable).
- ☒ was filed as PCT International Application Number PCT/FR99/02790 on 15 November 1999 and was amended under PCT Article 19 on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 35 U.S.C. 365(b) of any foreign application(s) for patent or inventor's certificate, or under 35 U.S.C. 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
France	98/14687	19 November 1998	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or under 35 U.S.C. 365(c) of any PCT international application designating the United States of America, that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

